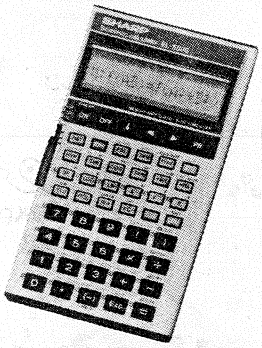
EL—5030

SHARP SERVICE MANUAL

CODE : 00ZEL5030SM/E

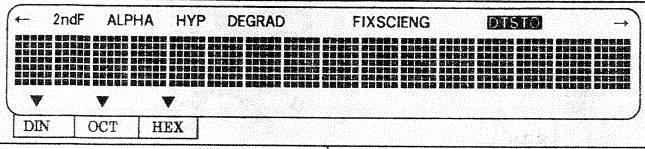


SHAR-03262

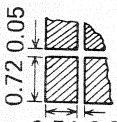
MODEL EL-5030

STANDARD FUNCTION	10 (+2) digits	26 M

DISPLAY SECTION



ELEMENT: FEM DOT LCD	PARTS NAME: LF7319E
NUMERAL: 16 digits	



Character size: 5.34(H) x 2.9(W)
Display pitch : 3.55
5 x 7 DOTS
(mm)

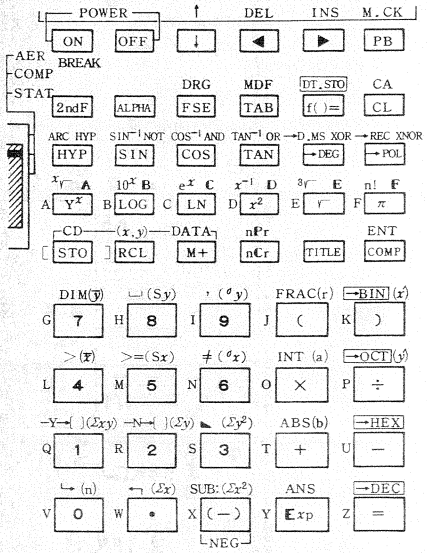
LSI

Name :	SC61720D19 (CPU)	TC-5518BFL (RAM)
Type :	Flat package	Dual in line
Pin :	100 pins	24 pins

POWER SUPPLY	AC: X	DC: ○

- BATTERY TYPE : CR-2032 x 2 pcs
- OPERATION TIME: About 420 hours under 10 minutes' operation and 50 minutes' display/hour

KEY LAYOUT



- RESET switch and CONTRAST adjuster on the bottom cabinet

KEY SYSTEM	(1) Rubber key: ON, OFF, ↓, ◀, ▶, PB, Large keys
	(2) Plastic resin key top + rubber spring: Other small keys

AC ADAPTOR	—
RECHARGEABLE BATTERY	—
POWER CONSUMPTION	0.015 W
AUTO POWER OFF TIME	Approx. 10 minutes
MEMORY PROTECT	Yes
DIMENSION (mm)	74 (W) 135 (D) 9 (H)
PRODUCT OUTLINE	

Functional and program step enhanced version of the EL-5103.
Program steps: 1400 steps
New functions: Logical operations (NOT, AND, OR, XOR, XNOR), n-adic conversion, etc.

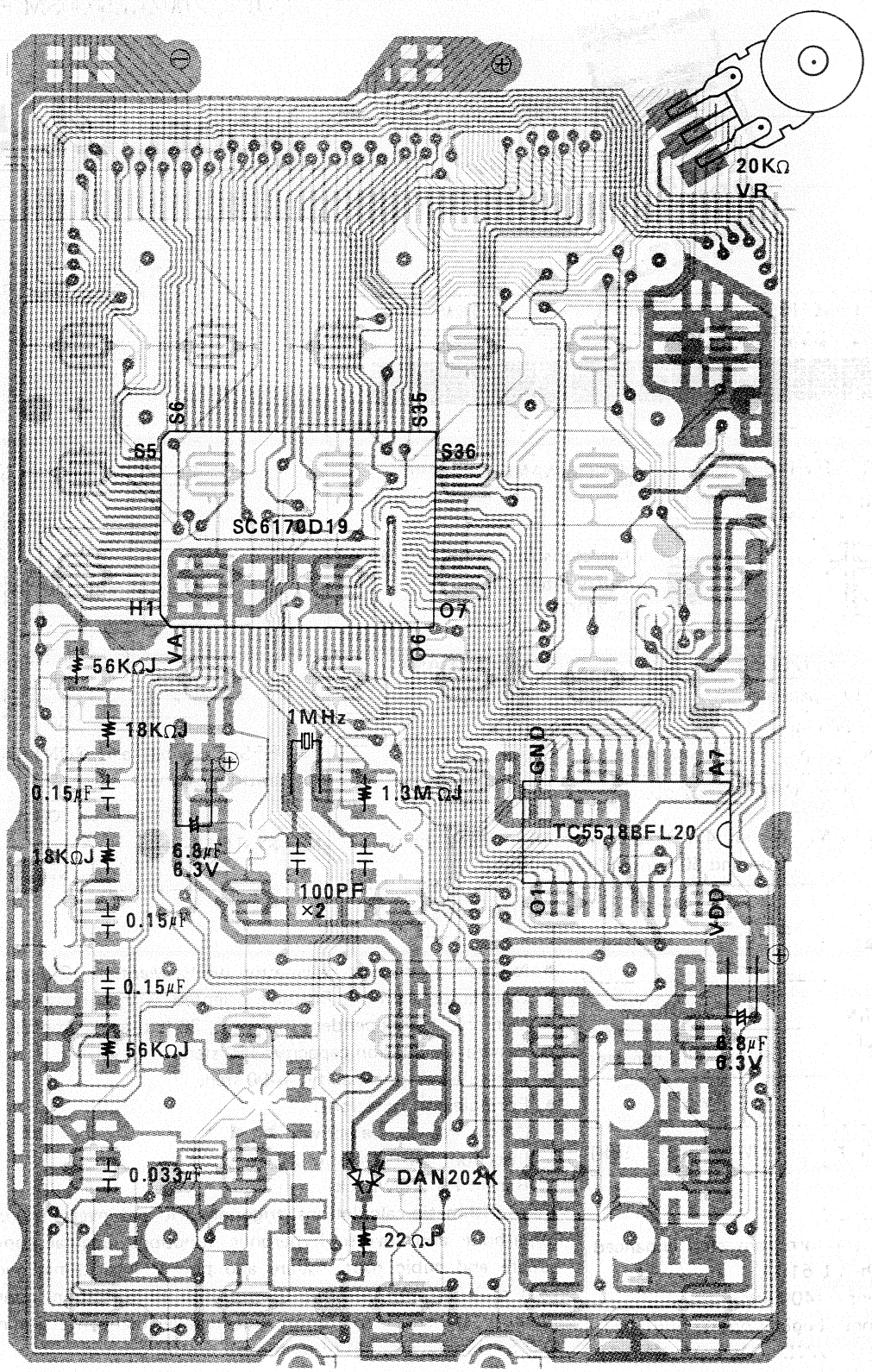
CALCULATIONS

- Number of internal calculation digits: Mantissa 12 digits, Exponent 2 digits
- Calculation method: Formula oriented, with priority discrimination function
- Memory: 1 (independent memory), 26 (storage memory)
- General calculation capacity: 160 steps
- Formula strings capacity: 1400 steps
- Formula edit functions:
  Cursor step-up, step-down: ▶, ◀
  Insertion: iNS Deletion: DEL
  Recall: PB (Play back)

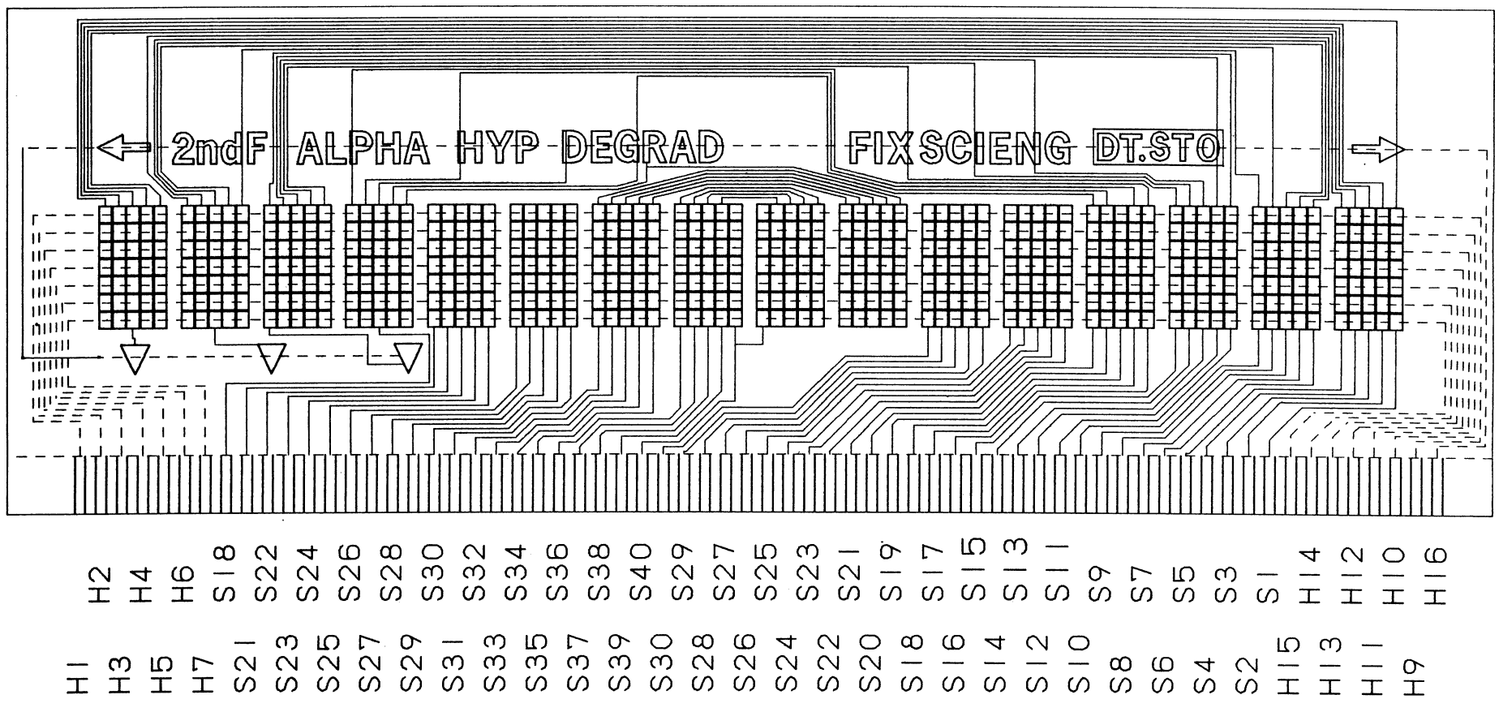
Four arithmetic calculations, trigonometric and inverse trigonometric functions, hyperbolic and inverse hyperbolic functions, angular conversion, reciprocal, square and cubic root, square and power, logarithmic and exponential, Xth root of Y($\sqrt[x]{y}$), factorial, permutation, combination, coordinate conversion, memory, statistical, and binary-octalhexadecimal conversion calculations
DT. STO mode etc. (144 Functions)

3962

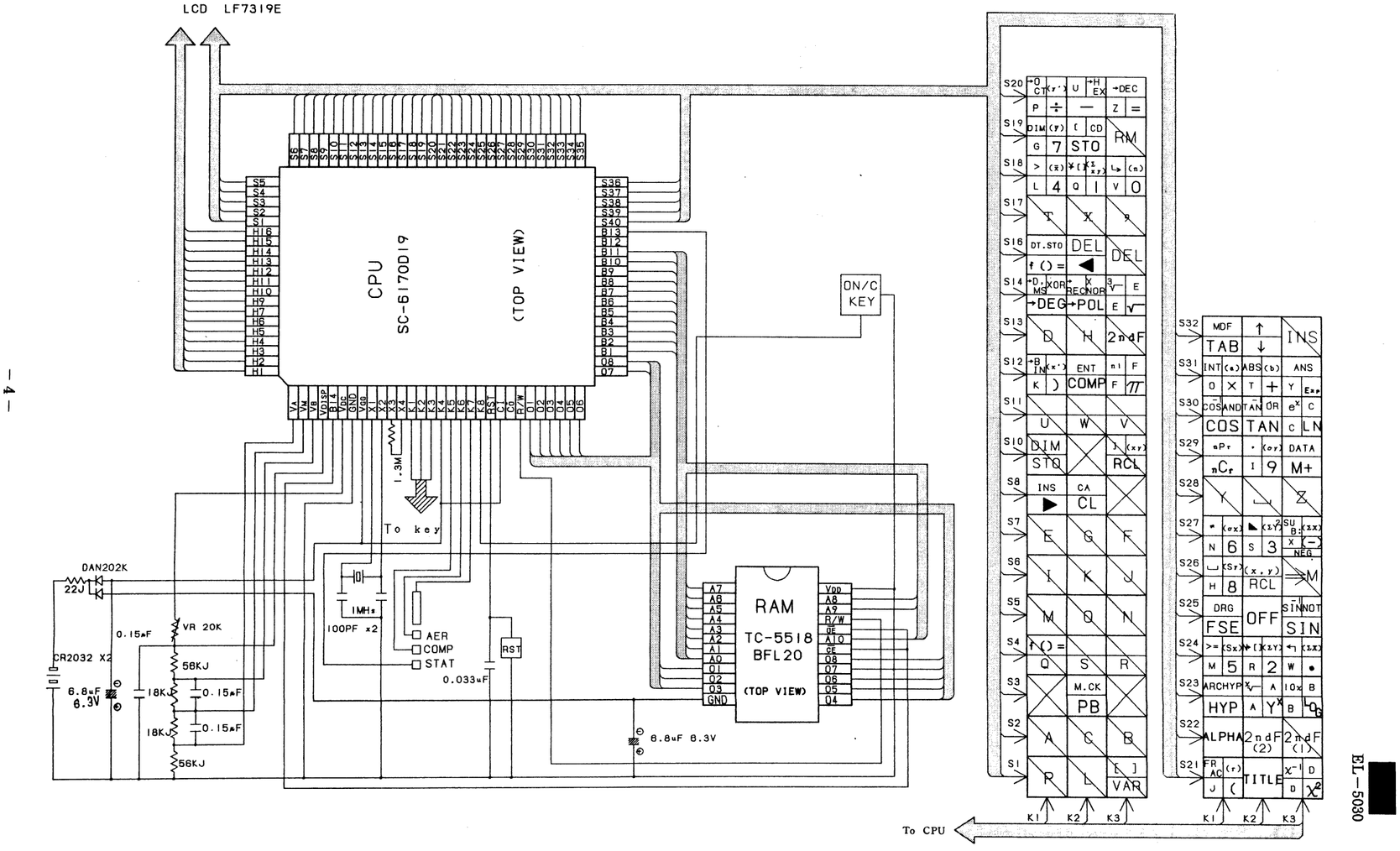
1. PWB LAYOUT


20KΩ
VR
S6
S35
S5
S36
SC6170D19
H1
O7
VA
O6
56KΩJ
18KΩJ
1MHz
0.15μF
1.3MΩJ
6.8μF
6.3V
18KΩJ
100PF
×2
0.15μF
0.15μF
56KΩJ
GND
A7
TC5518BFL20
O1
VDD
6.8μF
6.3V
0.033μF
DAN202K
22ΩJ

2. LCD (LF7319E)



3. CIRCUIT DIAGRAM



4.CPU (SC61720D19) SIGNAL DESCRIPTION

The microchip used for this model is an external RAM drive CPU having 17KB ROM area and display control circuit within the chip.

Pin No.	Signal name	In/Out	Function
1	VA	In	LCD drive power
2	VM	In	LCD drive power
3	VB	In	LCD drive power
4	VDISP	In	LCD drive power
5	B14	Out	RAM chip enable, normally high
6	VDC	Out	LCD driver power. (High: OFF)
7	GND	In	+ supply
8	VGG	In	− supply
9	X1	Out	System clock oscillator output
10	X2	In	System clock oscillator input
11	X3	Out	Display clock oscillator output
12	X4	In	Display clock oscillator input
13~15	K1~K3	In	Key input signal, normally Low
16	K4	In	Normally Low
17	K5	Out	Slide switch signal, normally high. Low when sensing AER
18	K6	Out	Slide switch signal, normally high. Low when sensing COMP
19	K7	In	Normally Low
20	K8	In	Key input signal (ON/C), normally Low
21	RESET	In	Reset input, active high
22	CI	In	CPU test pin, VGG connected
23	CO	Out	Not used.
24	R/W	Out	RAM R/W signal.
25	O1	In/Out	Data bus, normally high
≀	≀	≀	≀
32	O8	In/Out	Data bus, normally high
33	B1	Out	Address bus (Low: Standby)
≀	≀	≀	≀
43	B11	Out	Address bus (Low: Standby)
44	B12	−	Not used
45	B13	Out	Slide switch signal, normally high. Low when sensing STRT
46	S40	Out	LCD segment, key strobe signal (Low or high Standby) 4-level pulse during display
≀	≀	≀	≀
85	S12	Out	LCD segment, key strobe signal (Low or high Standby) 4-level pulse during display
86	H16	Out	LCD backplate signal (Low or high Standby) 4-level pulse during display
≀	≀	≀	≀
93	H9	Out	LCD backplate signal (Low or high Standby) 4-level pulse during display
94	H7	Out	LCD backplate signal (Low or high Standby) 4-level pulse during display
≀	≀	≀	≀
100	H1	Out	LCD backplate signal (Low or high Standby) 4-level pulse during display

5. DIAGNOSTIC FUNCTION

To check proper functioning of the RAM and the display, the diagnostic function is provided for such as all display digit activations, alternate activations, and RAM write and read.

[General]

Simultaneous and continuous depression of the [HYP] key, [COMP] key, and RESET switch will starts to perform the following tests in the following order in an interval of one second each.

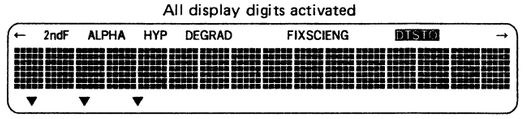
(1) All display digits activated
(2) All display digits light off.
(3) Alternate display dots activation (#1)
(4) Alternate display dots activation (#2)

Proper activation of display digit must be visually checked.

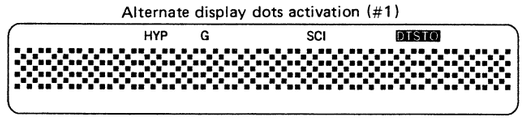
NOTE: After releasing of the above three keys, press the [COMP] key to stop testing. It is possible to advance the test item when the keys are released and depressed.

[Display]

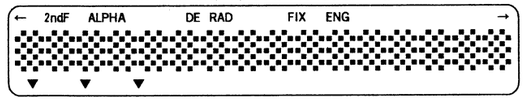
All display digits activated



Alternate display dots activation (#1)



Alternate display dots activation (#2)



[Procedure]

1) Set the slide switch to the COMP or AER position.
2) Press the [HYP] key with your left middle finger and the [COMP] key with your left index finger.
3) Push the RESET switch on the back of the cabinet with the tip of a ball point pen held in your right hand.
4) Release your fingers from the keys and switch at the same time.
5) The test items (1) thru (3) above will come displayed in the given order.

NOTE: To stop displaying, quickly press the [COMP] key with your left index finger after 4), then release your index finger from the key to go to a next displaying.

[RAM size check]

The capacity of the RAM will be displayed when the [2ndF] is depressed in conjunction with the [M.CK] key. When the contents of the RAM are cleared, "1421 BYTES LEFT" will be indicated after the above operation and you can check that the RAM contents have been cleared.

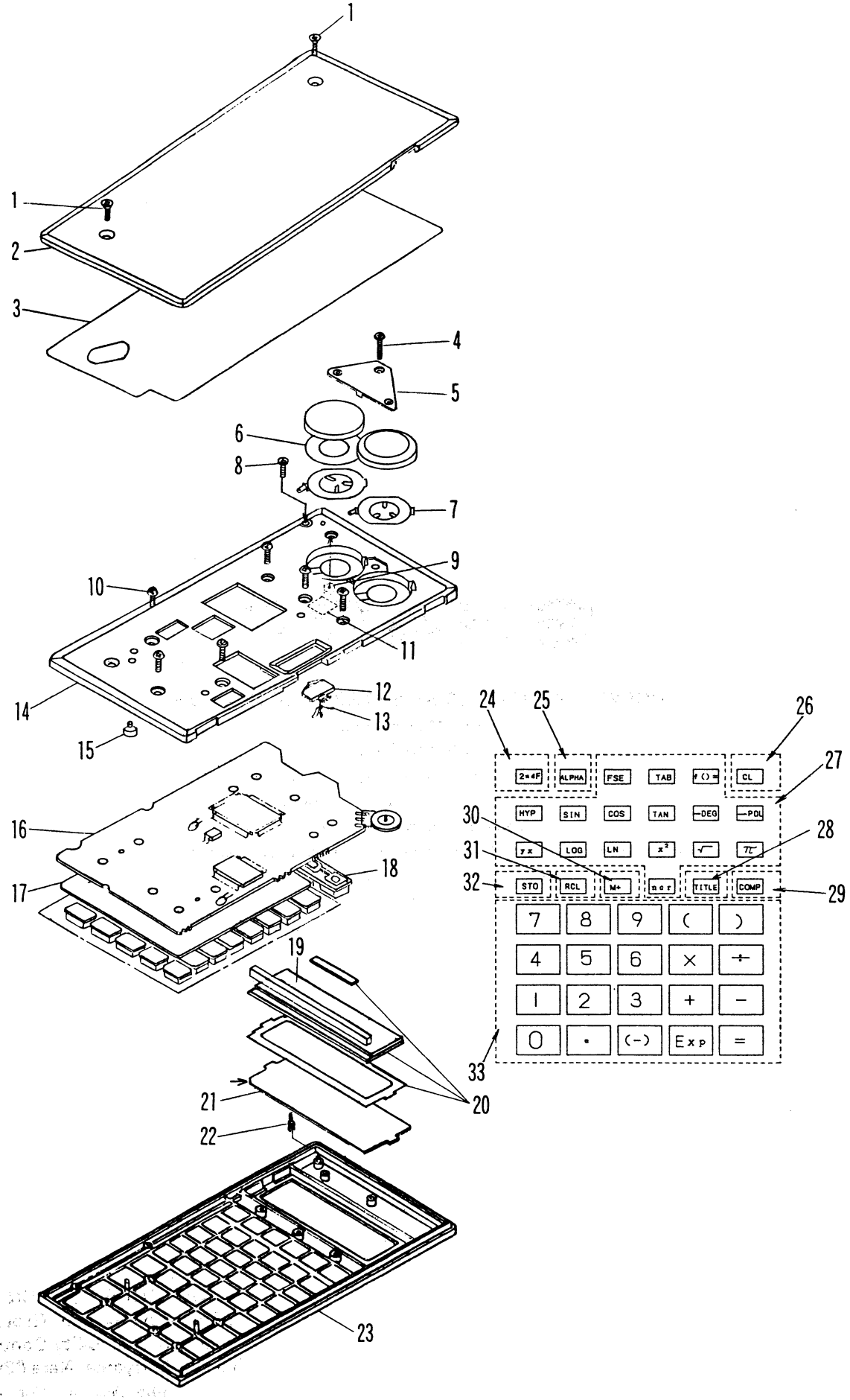
6. POWER CONSUMPTION AND POWER SUPPLY

When the calculator is in action (displaying), ION must be less than 200 microamperes with VIN at 6V across + and − lines).
When the calculator is not in action, IOFF must be less than 5.2 microamperes with VIN at 6V across + and − lines.

Lithium battery	Discharge capacity	Terminal voltage
CR-2025 x 2 pcs	About 120mA/h	About 6V

7. PARTS LIST & GUIDE

NO.	PARTS CODE	PRICE RANK	NEW MARK	PART RANK	DESCRIPTION
1	XBSSM20P06000	AA		C	Screw (2×6)
2	HDECA2220CCZZ	AH	N	D	Bottom panel
3	PZETL1642CCZZ	AC	N	C	Insulator sheet (with inst)
4	LX−BZ1199CCZZ	AA		C	Screw
5	QTANZ1487CCZZ	AA		C	Interface terminal
6	PZETL1564CCZZ	AB		C	Insulator sheet
7	QTANZ1486CCZZ	AA		C	Battery terminal
8	LX−BZ1109CCZZ	AA		C	Screw (2×4.5)
9	LX−NZ1010CCZZ	AA		C	Nut (2mm)
10	LX−BZ1094CCZZ	AA		C	Screw (2×5)
11	PTPEH1242CCZZ	AA		C	Protector tape (for LSI)
12	MSLiP1018CCZZ	AB		C	Slider
13	QCNTM1042CCZZ	AA		C	Slide switch terminal
14	LCHSM1193CCZZ	AD	N	C	Chassis
15	PGUMM1586CC01	AB		C	Switch for reset
16	DUNTK9479CCZZ	BK	N	E	PWB unit
17	PGUMM1355CCZZ	AH		B	Key rubber
18	PGUMM1644CC01	AE	N	B	Key rubber (6keys)
19	PGUMS1647CCZZ	AB	N	C	Rubber connector
20	DUNT−9480CCZZ	AT	N	E	Display unit
21	PFiLV1577CCZZ	AC	N	C	Polarized filter
22	MSPRC1181CCZZ	AA		C	Spring
23	DUNTG9478CCZZ	AR	N	D	Top cabinet unit
24	JKNBZ1995CC01	AF		C	Key top ("2ndF"key,48pcs/1set)
25	JKNBZ2018CC01	AF	N	C	Key top ("ALPHA"key,48pcs/1set)
26	JKNBZ1916CC06	AF	N	C	Key top ("CL"key,48pcs/1set)
27	JKNBZ1994CC30	AF	N	C	Key top (Function keys,2set)
28	JKNBZ1996CC02	AF		C	Key top ("TITLE"key,48pcs/1set)
29	JKNBZ1996CC01	AF		C	Key top ("COMP"key,48pcs/1set)
30	JKNBZ1994CC31	AF	N	C	Key top ("M+"key,48pcs/1set)
31	JKNBZ1994CC33	AF	N	C	Key top ("RCL"key,48pcs/1set)
32	JKNBZ1994CC32	AF	N	C	Key top ("STO"key,48pcs/1set)
33	JKNBZ2016CC01	AF	N	C	Key top (Numeral keys 1set)
101	RC−CZ1014CCN1	AB		C	Capacitor (0.15μF)
102	RC−CZ1023CCZZ	AB		C	Capacitor (100pF)
103	RC−CZ1047CCZZ	AB		C	Capacitor (0.033μF)
104	RC−SZ1033CCZZ	AC		C	Capacitor (6.3WV 6.8μF)
105	RCRM−1001CCZZ	AF		B	Crystal (1024KHz)
106	RVR−Z2403QCZZ	AF		B	Variable resistor (20KΩ)
107	VHDDAN202K/−1	AB		B	Diode (DAN202K)
108	VHiSC61720D19	BA	N	B	IC (SC61720D19)
109	VHiTC5518BFL2	AY		B	IC (TC5518BFL2)
110	VRS−TP2BD135J	AA		C	Resistor (1/8W 1.3MΩ ±5%)
111	VRS−TP2BD183J	AA		C	Resistor (1/8W 18KΩ ±5%)
112	VRS−TP2BD220J	AA		C	Resistor (1/8W 22Ω ±5%)
113	VRS−TP2BD563J	AA		C	Resistor (1/8W 56KΩ ±5%)
201	TiNSE4850CCZZ	AY	N	D	Instruction book (U.S.A.)
	TiNSG4903CCZZ	AY	N	D	Instruction book (Germany)
	TiNSE4853CCZZ	AY	N	D	Instruction book (Other countries)
202	TLABH2558CCZZ	AB	N	D	Instruction card (Supplement)
203	SPAKA739BCCZZ	AB	N	D	Packing cushion for set
204	UBAGZ1499CCZZ	AH	N	D	Book type case
205	SPAKC740BCCZZ	AK	N	D	Packing case (U.S.A.)
	SPAKC743BCCZZ	AK	N	D	Packing case (CANADA)
	SPAKC744BCCZZ	AK	N	D	Packing case (U.Kingdom)
	SPAKC747BCCZZ	AK	N	D	Packing case (Other countries)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